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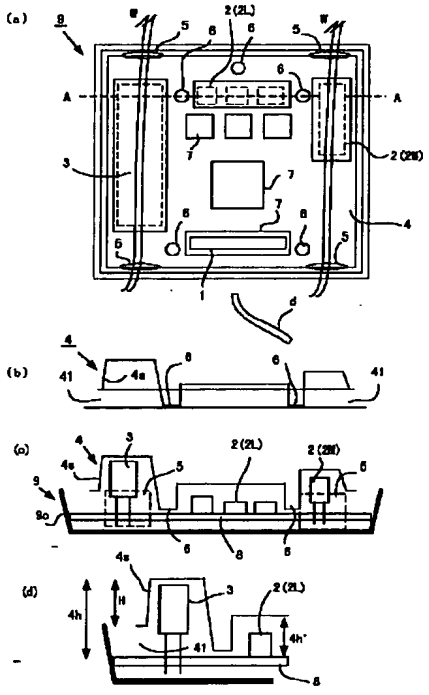
LL06 QQ05

(54)【発明の名称】　電子機器の絶縁カバー構造

(57)【要約】
【課題】　成型後の人手による放熱口切り込み作業をなくし、成型時に放熱口が設けられる電子機器の絶縁カバー構造を提供する。
【解決手段】　電子機器９に電線ｄを結線する結線端子１、結線端子に接続され電子機器を動作させるための内部回路２、内部回路に電源を供給する電源回路３を有し、電子機器の結線端子に電線を結線する際に内部回路および電源回路を絶縁保護する絶縁カバー４を備え、絶縁カバーに電源回路および内部回路から発生する熱を放熱するための放熱口５を設けた電子機器の絶縁カバー構造において、絶縁カバーの側面４ｓの深さＨを絶縁カバーの深さ４ｈの途中までとなるよう寸法決めして放熱口として側面に開口部４１を具備する。



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【特許請求の範囲】
【請求項１】電子機器（９）に電線（ｄ）を結線する結線端子（１）、前記結線端子に接続され前記電子機器を動作させるための内部回路（２）、前記内部回路に電源を供給する電源回路（３）を有し、前記電子機器の前記結線端子に前記電線を結線する際に前記内部回路および前記電源回路を絶縁保護する絶縁カバー（４）を備え、前記絶縁カバーに前記電源回路および前記内部回路から発生する熱を放熱するための放熱口（５）を設けた電子機器の絶縁カバー構造において、
前記絶縁カバーの側面（４ｓ）の深さ（Ｈ）を前記絶縁カバーの深さ（４ｈ）の途中までとなるよう寸法決めして前記放熱口として前記側面に開口部（４１）を具備したことを特徴とする電子機器の絶縁カバー構造。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は電子機器の絶縁カバー構造に係わり、特に、絶縁カバーで被覆された電源回路および内部回路から発生する熱の放熱を必要とする電子機器の絶縁カバー構造に関する。
【０００２】
【従来の技術】テレビドアホン装置等の電子機器９０は、電線ｄが結線される結線端子１０、結線端子１０に接続され電子機器９０を動作させるための内部回路２０、内部回路２０に電源を供給する電源回路３０を有し、この電子機器９０の結線端子１０に電線ｄを結線する際に、内部回路２０および電源回路３０を絶縁保護する絶縁カバー４０を備えている。
【０００３】従来、この種の絶縁カバー４０は、図２（ａ）、（ｂ）、（ｃ）に示すように、基板８０にビス留め固定されるビス留め穴６０、６０、…および機器取付用の穴７０、７０、…を有し、電源回路３０部分は高く、低い内部回路２０Ｌ部分は低く、中間高さの内部回路２０Ｍ部分はやや高く、内部の部品を全体的に囲みこむ構造であり、耐熱塩化ビニールで一体成型されている。
【０００４】テレビドアホン装置等の電源回路３０および内部回路２０からは熱が発生するので、その熱を放熱するため、それぞれの機器、特に電源回路３０近傍に放熱口５０を設ける必要がある。
【０００５】一体成型時に放熱口５０を絶縁カバー４０の側面に設けることはできないので、絶縁カバー４０の側面に放熱口５０を設けるには、図２（ｄ）に示すように、一体成型された電源回路３０近傍の絶縁カバー４０の側面をハサミ等で切り込みを入れて放熱口５０を形成していた。
【０００６】
【発明が解決しようとする課題】上記従来の電子機器の絶縁カバー構造では、絶縁カバー４０の側面に放熱口５０を作成するためには、絶縁カバー４０を成型後に人手

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によって切り込みを入れる必要があり、手間がかかるという難点があった。
【０００７】本発明は、この難点を解決するためになされたもので、成型後の人手による放熱口切り込み作業をなくし、成型時に放熱口が設けられる電子機器の絶縁カバー構造を提供することを目的とする。
【０００８】
【課題を解決するための手段】この目的を達成するため、本発明による電子機器の絶縁カバー構造は、電子機器に電線を結線する結線端子、結線端子に接続され電子機器を動作させるための内部回路、内部回路に電源を供給する電源回路を有し、電子機器の結線端子に電線を結線する際に内部回路および電源回路を絶縁保護する絶縁カバーを備え、絶縁カバーに電源回路および内部回路から発生する熱を放熱するための放熱口を設けた電子機器の絶縁カバー構造において、絶縁カバーの側面の深さを絶縁カバーの深さの途中までとなるよう寸法決めして放熱口として側面に開口部を具備したものである。
【０００９】このような電子機器の絶縁カバー構造によれば、機器内部の回路を絶縁保護するだけでなく、機器内部の回路からの熱を放熱するための放熱口を必要に応じて容易に形成することができる。
【００１０】
【発明の実態の形態】以下、本発明の好ましい実施の形態例について図面を参照して詳述する。
【００１１】図１（ａ）に示すように、テレビドアホン装置等の電子機器９は、電線ｄが結線される結線端子１、結線端子１に接続され電子機器９を動作させるための内部回路２、２、…、これら内部回路２に電源を供給する電源回路３を有し、この電子機器９の結線端子１に電線ｄを結線する際に、内部回路２および電源回路３を絶縁保護する絶縁カバー４を備えている。
【００１２】図１（ａ）、（ｂ）、（ｃ）に示すように、本発明による電子機器の絶縁カバー構造の絶縁カバー４は、基板８にビス留め固定されるビス留め穴６、６、…および機器取付用の穴７、７、…を有し、電源回路３部分は高く、低い内部回路２Ｌ部分は低く、中間高さの内部回路２Ｍ部分はやや高く、内部の部品を全体的に囲みこむ構造であり、耐熱塩化ビニールで一体成型される。
【００１３】図１（ａ）、（ｃ）、（ｄ）に示すように、電源回路３および内部回路２から発生する熱を放熱するために、絶縁カバー４の側面４ｓの深さＨを絶縁カバー４の深さ４ｈの途中までとなるよう寸法決めして、側面下方の開口部４１を放熱口５としたものである。なお、実施例では、絶縁カバー４の深さ４ｈは、最も高い電源回路３部分の深さが採用されているが、低い内部回路２Ｌ部分の深さ４ｈ’でもよく、絶縁カバー４の上部と基板８との途中、好ましくは絶縁カバー４が基板８に固定されたとき、電子機器の下筐体９ｃの側面において

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その上部近辺に相当する深さが望まれる。

【００１４】図１（ｂ）では、絶縁カバー４の全側面４ｓの下方を開口部４１とした例を示したが、部分的に開口部４１を具備するように構成してもよい。即ち、図１（ａ）、（ｃ）に示すように、特に発熱の多い機器、例えば電源回路３の長軸方向の２箇所、および中間高さの内部回路２Ｍの長軸方向の２箇所にそれぞれ放熱口５、５を設けるよう、開口部４１を構成し、その他の絶縁カバー４の側面４ｓを基板８付近まで深く成型しても同様に好適である。

【００１５】次に本発明による電子機器の絶縁カバー構造の作用を説明する。

【００１６】図１（ａ）、（ｃ）に示すように、絶縁カバー４は、ビス留め穴６、６、…位置で基板８にビス留め固定される。施工時には機器取付用の穴７、７、…から、結線端子１に電線ｄを結線したり、電子機器９を壁面等に取付固定するが、絶縁カバー４の被覆によって電源回路３および内部回路２、２、…には触れることはなく、また、電源回路３、内部回路２からの放熱は、絶縁カバー４の側面下方の開口部４１を放熱口５としてなされ（矢印Ｗ）、この開口部４１は絶縁カバー４の成型時に形成され、成型後のハサミ等による切り込み作業は必要ない。

【００１７】

【発明の効果】以上の説明から明らかなように、本発明の電子機器の絶縁カバー構造は、電子機器に電線を結線する結線端子、結線端子に接続され電子機器を動作させるための内部回路、内部回路に電源を供給する電源回路を有し、電子機器の結線端子に電線を結線する際に内部回路および電源回路を絶縁保護する絶縁カバーを備え、

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絶縁カバーに電源回路および内部回路から発生する熱を放熱するための放熱口を設けた電子機器の絶縁カバー構造において、絶縁カバーの側面の深さを絶縁カバーの深さの途中までとなるよう寸法決めして放熱口として側面に開口部を具備したので、成型後のハサミ等による切り込み作業は必要なく、放熱口を容易に形成することができる。

【図面の簡単な説明】

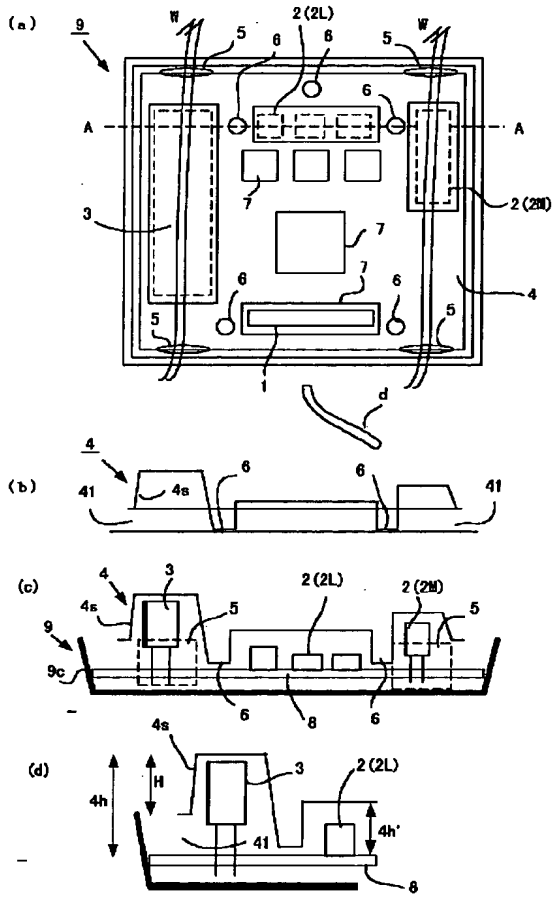
【図１】本発明による電子機器の絶縁カバー構造を示す図で、（ａ）は平面図、（ｂ）は絶縁カバーに関するＡ－Ａ線断面図、（ｃ）は電子機器の基板側と絶縁カバーとの関係を説明する断面図、（ｄ）放熱口と電子機器との関係を説明する部分断面図である。

【図２】従来の電子機器の絶縁カバー構造を示す図で、（ａ）は平面図、（ｂ）は絶縁カバーに関するＡ’－Ａ’線断面図、（ｃ）は電子機器の基板側と絶縁カバーとの関係を説明する断面図、（ｄ）放熱口と電子機器との関係を説明する部分断面図である。

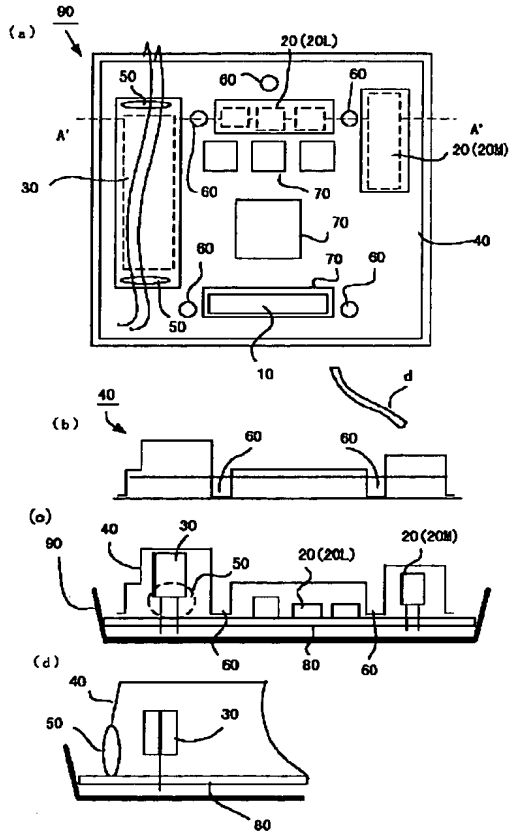
【符号の説明】

１・・・・・結線端子
２・・・・・内部回路
３・・・・・電源回路
４・・・・・絶縁カバー
４ｓ・・・・・絶縁カバーの側面
４ｈ・・・・・絶縁カバーの深さ
４１・・・・・開口部
５・・・・・放熱口
９・・・・・電子機器
Ｈ・・・・・絶縁カバーの側面の深さ

【図１】


(a)
9
W
5
6
2(2L)
6
5
W
A
A
6
7
3
2(2M)
7
7
6
6
4
5
5
1
d
(b)
4
41
4s
6
6
41
(c)
4
3
2(2L)
2(2M)
4s
5
5
9
9c
6
8
6
(d)
4s
3
2(2L)
4h
H
4h'
41
6

【図２】


(a)
90
20(20L)
50
60
60
A'
A'
20(20M)
30
60
70
70
40
60
70
60
50
10
d
(b)
40
60
60
(c)
90
40
30
20(20L)
20(20M)
50
60
80
60
(d)
40
50
30
80

INSULATING COVER STRUCTURE OF ELECTRONIC APPARATUS

Patent Number: JP2001284860
Publication date: 2001-10-12
Inventor(s): SUZUKI KAZUAKI
Applicant(s): AIPHONE CO LTD
Requested Patent: ☐ JP2001284860
Application Number: JP20000092145 20000329
Priority Number(s):
IPC Classification: H05K7/20; H04M1/02; H04N7/18
EC Classification:
Equivalents:

Abstract

PROBLEM TO BE SOLVED: To provide an insulating cover structure of an electronic apparatus where a heat-radiation cutout is provided at molding, excluding manually cutting of the heat radiation cutout after molding.
SOLUTION: An insulating cover 4 is provided which comprises a wire- connection terminal 1 for connecting an electric wire (d) to an electronic apparatus 9, an internal circuit 2 for operating the electronic apparatus connected to the wire-connecting terminal, and a power-source circuit 3 for supplying power source to the internal circuit, and insulates the internal circuit and the power-source circuit when the electric wire is connected to the wire-connecting terminal of the electronic apparatus. The insulating cover structure of an electronic apparatus is provided with a heat-radiation port 5 for dispersing the heat generated at the power-source circuit and the internal circuit to the insulating cover. Here, an opening part 41 is provided to a side surface as a heat- radiation cutout so that a depth H of the side surface 4f of the insulating cover reaches halfway toward a depth 4h of the insulating cover.

PATENT ABSTRACTS OF JAPAN

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H04M 1/02
H04N 7/18

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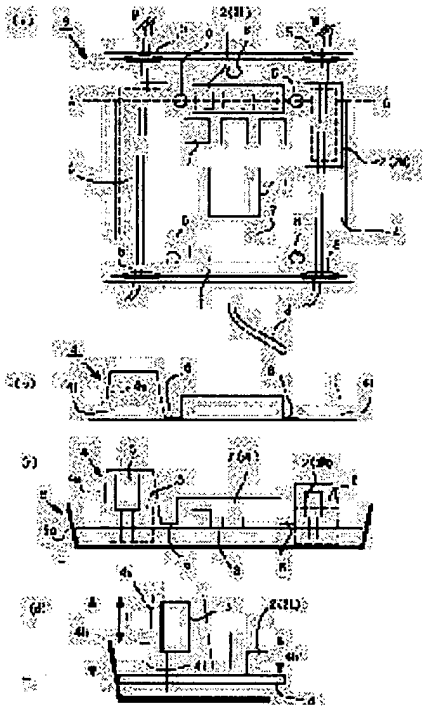
(22)Date of filing : 29.03.2000

(71)Applicant : AIPHONE CO LTD
(72)Inventor : SUZUKI KAZUAKI

(54) INSULATING COVER STRUCTURE OF ELECTRONIC APPARATUS

(57)Abstract:
PROBLEM TO BE SOLVED: To provide an insulating cover structure of an electronic apparatus where a heat-radiation cutout is provided at molding, excluding manually cutting of the heat radiation cutout after molding.
SOLUTION: An insulating cover 4 is provided which comprises a wire-connection terminal 1 for connecting an electric wire (d) to an electronic apparatus 9, an internal circuit 2 for operating the electronic apparatus connected to the wire-connecting terminal, and a power-source circuit 3 for supplying power source to the internal circuit, and insulates the internal circuit and the power-source circuit when the electric wire is connected to the wire-connecting terminal of the electronic apparatus. The insulating cover structure of an electronic apparatus is provided with a heat-radiation port 5 for dispersing the heat generated at the power-source circuit and the internal circuit to the insulating cover. Here, an opening part 41 is provided to a side surface as a heat- radiation cutout so that a depth H of the side surface 4f of the insulating cover reaches halfway toward a depth 4h of the insulating cover.



LEGAL STATUS

[Date of request for examination]

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[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

* NOTICES *

CLAIMS

[Claim(s)]
[Claim 1] Insulating covering structure of electronic equipment characterized by providing or including the following Insulating covering which carries out insulation protection of said internal circuitry and said power circuit in case it has a power circuit (3) which supplies a power supply to an internal circuitry (2) for connecting with a connection terminal (1) which connects an electric wire (d) on electronic equipment (9), and said connection terminal, and operating said electronic equipment, and said internal circuitry and said electric wire is connected for said connection terminal of said electronic equipment (4) In insulating covering structure of electronic equipment where thermolysis opening (5) for radiating heat in heat generated from said power circuit and said internal circuitry to said insulating covering was prepared, the size arrangement of the depth (H) of the side (4s) of said insulating covering is carried out to becoming to the middle of the depth (4h) of said insulating covering, and it is opening (41) to said side as said thermolysis opening.

[Translation done.]

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] Especially this invention relates to the insulating covering structure of the electronic equipment which needs thermolysis of the heat generated from the power circuit and internal circuitry which were covered with insulating covering with respect to the insulating covering structure of electronic equipment.
[0002]
[Description of the Prior Art] In case the electronic equipment 90, such as television intercom equipment, has the power circuit 30 which supplies a power supply to the internal circuitry 20 for an electric wire d being connected to the connection terminal 10 and the connection terminal 10 by which connection is carried out, and operating electronic equipment 90, and an internal circuitry 20 and connects an electric wire d for the connection terminal 10 of this electronic equipment 90, it is equipped with the insulating covering 40 which carries out insulation protection of an internal circuitry 20 and the power circuit 30.
[0003] As this kind of insulating covering 40 is conventionally shown in drawing 2 (a), (b), and (c) It has the holes 70 and 70 for the bis-stop holes 60 and 60 by which bis-stop immobilization is carried out, --, device attachment, and -- in a substrate 80. Power circuit 30 portion is high, a low internal-circuitry 20L portion is low, and internal-circuitry 20M portion of middle height is structure which is a little high, surrounds internal components on the whole, and is crowded, and is really cast by heat-resistant vinyl chloride.
[0004] Since heat occurs from a power circuit 30 and internal circuitries 20, such as television intercom equipment, in order to radiate heat in the heat, it is necessary to form the thermolysis opening 50 in each device, especially about 30 power circuit.
[0005] Since the thermolysis opening 50 could not really be formed in the side of the insulating covering 40 at the time of molding, in order to have formed the thermolysis opening 50 in the side of the insulating covering 40, as shown in drawing 2 (d), slitting was put in for the side of the really cast about 30-power circuit insulating covering 40 with scissors etc., and the thermolysis opening 50 was formed.
[0006]
[Problem(s) to be Solved by the Invention] With the insulating covering structure of the above-mentioned conventional electronic equipment, in order to create the thermolysis opening 50 in the side of the insulating covering 40, after casting the insulating covering 40, slitting needed to be put in by the help and there was a difficulty of taking time and effort.
[0007] This invention was made in order to solve this difficulty, it abolishes the thermolysis opening slitting activity by the help after molding, and aims at offering the insulating covering structure of electronic equipment where thermolysis opening is prepared at the time of molding.
[0008]
[Means for Solving the Problem] In order to attain this purpose, insulating covering structure of electronic equipment by this invention An internal circuitry for connecting with a connection terminal and a connection terminal which connect an electric wire on electronic equipment, and operating electronic equipment, It has insulating covering which carries out insulation protection of an internal circuitry and the power circuit in case it has a power circuit which supplies a power supply to an internal circuitry and an electric wire is connected for a connection terminal of electronic equipment. In insulating covering structure of electronic equipment where thermolysis opening for radiating heat in heat generated from a power circuit and an internal circuitry to insulating covering was prepared, opening is size-arrangement-provided on the side as thermolysis opening by carrying out the depth of the side of insulating covering to becoming to the middle of the depth of insulating covering.

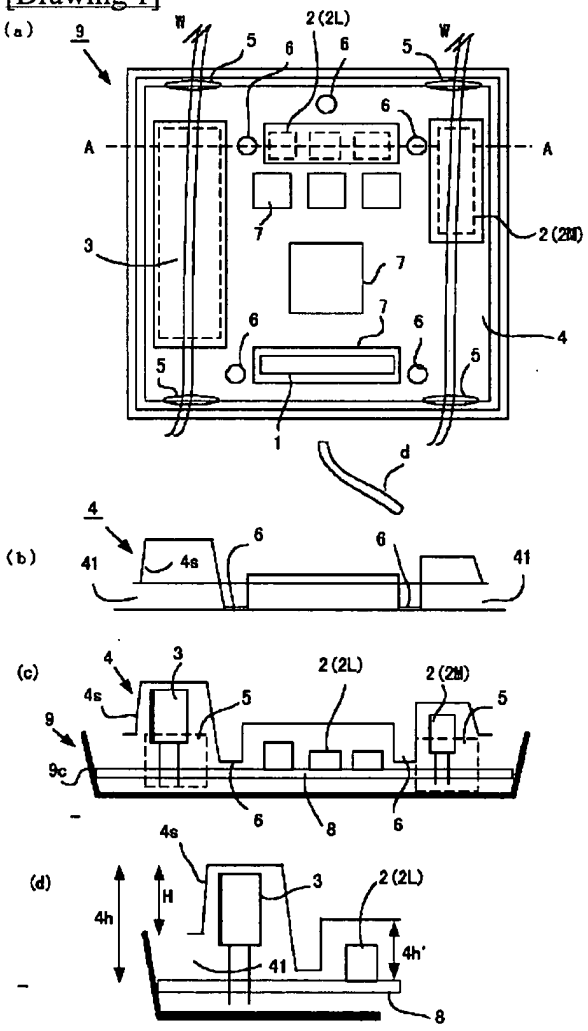
[0009] It not only carries out insulation protection of the circuit inside a device, but according to insulating covering structure of such electronic equipment, it can form easily thermolysis opening for radiating heat in heat from a circuit inside a device if needed.
[0010]
[A gestalt of the actual condition of invention] Hereafter, an example of a gestalt of desirable operation of this invention is explained in full detail with reference to a drawing.
[0011] As shown in drawing 1 (a), the electronic equipment 9, such as television intercom equipment The internal circuitries 2 and 2 for an electric wire d being connected to the connection terminal 1 and the connection terminal 1 by which connection is carried out, and operating electronic equipment 9, --, In case it has the power circuit 3 which supplies a power supply to these internal circuitries 2 and an electric wire d is connected for the connection terminal 1 of this electronic equipment 9, it has the insulating covering 4 which carries out insulation protection of an internal circuitry 2 and the power circuit 3.
[0012] As shown in drawing 1 (a), (b), and (c), the insulating covering 4 of insulating covering structure of electronic equipment by this invention It has the holes 7 and 7 for the bis-stop holes 6 and 6 by which bis-stop immobilization is carried out, --, device attachment, and -- in a substrate 8. Power circuit 3 portion is high, a low internal-circuitry 2L portion is low, and internal-circuitry 2M portion of middle height is structure which is a little high, surrounds internal components on the whole, and is crowded, and is really cast by heat-resistant vinyl chloride.
[0013] As shown in drawing 1 (a), (c), and (d), in order to radiate heat in heat generated from a power circuit 3 and an internal circuitry 2, the size arrangement of the opening 41 of a side lower part is carried out to the thermolysis opening 5 by carrying out depth [of 4s of sides of the insulating covering 4] H to becoming to the middle with a depth [of the insulating covering 4] of 4h. In addition, in the example, the depth which depth 4h' of a low internal-circuitry 2L portion is sufficient as, and corresponds near the upper part in the side of bottom case of electronic equipment 9c when the insulating covering 4 is preferably fixed to a substrate 8 in the middle of the upper part of the insulating covering 4 and a substrate 8 although the depth of power circuit 3 portion with highest depth of 4h of the insulating covering 4 is adopted is desired.
[0014] Although an example which used a lower part of 4s of all sides of the insulating covering 4 as opening 41 was shown, you may constitute from drawing 1 (b) so that opening 41 may be provided partially. That is, even if it constitutes a opening 41 and casts deeply 4s of sides of the other insulating coverings 4 up to the substrate 8 neighborhood so that the thermolysis openings 5 and 5 may be especially formed in two places of the direction of a major axis of internal-circuitry 2M of two places and middle height of a device of a major axis with much pyrexia, for example, the direction of a power circuit 3, respectively as shown in drawing 1 (a) and (c), it is suitable similarly.
[0015] Next, an operation of insulating covering structure of electronic equipment by this invention is explained.
[0016] As shown in drawing 1 (a) and (c), bis-stop immobilization of the insulating covering 4 is carried out in the bis-stop holes 6 and 6 and -- location at a substrate 8. Although an electric wire d is connected for the connection terminal 1 from the holes 7 and 7 for device attachment, and -- at the time of execution or attachment immobilization of the electronic equipment 9 is carried out at a wall surface etc. A power circuit 3 and internal circuitries 2 and 2, and -- are not touched by covering of the insulating covering 4. Moreover, thermolysis from a power circuit 3 and an internal circuitry 2 The opening 41 of a side lower part of the insulating covering 4 is made as thermolysis opening 5 (arrow head W), this opening 41 is formed at the time of molding of the insulating covering 4, and its slitting activity with scissors after molding etc. is unnecessary.
[0017]
[Effect of the Invention] So that clearly from the above explanation the insulating covering structure of the electronic equipment of this invention The internal circuitry for connecting with the connection terminal and connection terminal which connect an electric wire on electronic equipment, and operating electronic equipment, It has insulating covering which carries out insulation protection of an internal circuitry and the power circuit in case it has the power circuit which supplies a power supply to an internal circuitry and an electric wire is connected for the connection terminal of electronic equipment. In the insulating covering structure of electronic equipment where thermolysis opening for radiating heat in the heat generated from a power circuit and an internal circuitry to insulating covering was prepared Since opening was size-arrangement-provided on the side as thermolysis opening by carrying out the depth of the side of insulating covering to becoming to the middle of the depth of insulating covering, the slitting activity with the scissors after molding etc. is unnecessary, and can form thermolysis opening easily.

[Translation done.]

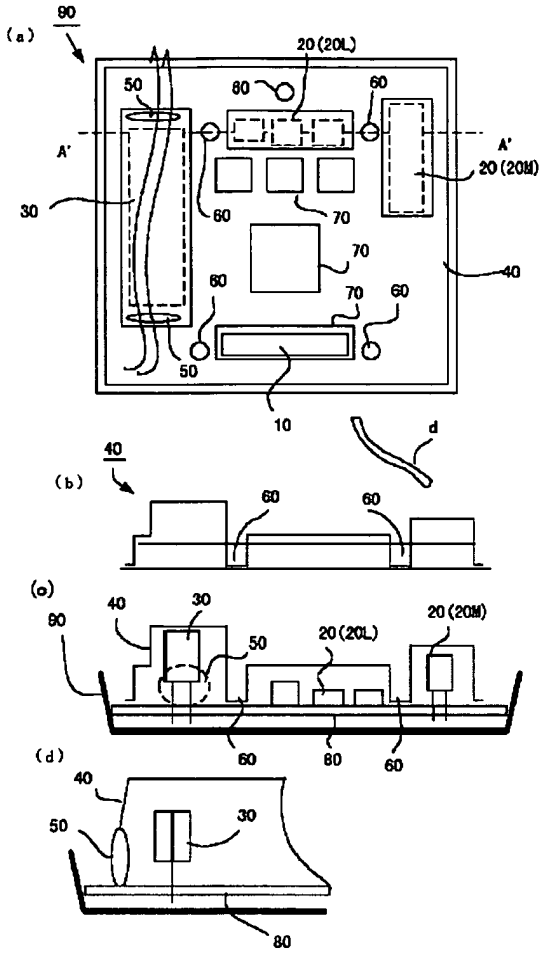
* NOTICES *

DRAWINGS

[Drawing 1]



[Drawing 2]



[Translation done.]